

FHWA Workshop over the Web for Travel Model Development Session 8 Homework Validation of Highway Assignment

Total Time Required: 30 Minutes

In this exercise, we will examine selected validation results for a fictitious highway assignment. The results we will be looking at are comparisons of base year modeled average weekday vehicle miles traveled (VMT) to observed VMT computed from traffic counts. The comparisons are summarized by facility type and area type.

Background

Open the spreadsheet **Homework session 8.xls**. The tab “Volume” contains one record for each link with a traffic count in the network, a total of 2,610 links. The following information is provided for each link:

- An identifier code
- The length of the link, in miles
- The base year model average weekday volume for the link
- The computed modeled average weekday VMT for the link
- The average weekday traffic count for the link
- The observed average weekday VMT computed from the traffic count
- The facility type (freeway, principal arterial, minor arterial, collector, ramp)
- The area type (central business district (CBD), fringe, urban, suburban, rural)

Questions

1. The tab “VMT-AT” contains the comparison of modeled and observed VMT by area type. The “% diff” column shows the percentage difference between modeled and observed VMT for each area type classification. How do you assess the comparison?

Answer: Overall, the modeled VMT is a bit low. It is significantly lower in suburban areas than in other area types. It would be worthwhile to examine VMT comparisons for other market segmentations to try to identify any specific issues with the network or trip table.

2. The tab “VMT-FT” contains the comparison of modeled and observed VMT by facility type. The “% diff” column shows the percentage difference between modeled and observed VMT for each area type classification. How do you assess the comparison?

Answer: This summary indicates that the low VMT is concentrated on freeways. The percentage difference between modeled and observed VMT exceeds the FHWA standard of 7 percent. While the modeled ramp VMT is much higher than the observed VMT, this is based on a very small sample of ramps with traffic counts.

3. The number of locations with available traffic count data may be somewhat out of the control of the modeler. Go back to the “Volume” tab. The column labeled “Count 2” represents a case where exactly half of the original locations have traffic count data. To see the effect of having half as many traffic counts on the validation results, copy the values from this column (cells K2:K2611) to the “Count” column (cells E2:E2611).
4. Go back to the tab “VMT-AT.” Place the cursor in one of the cells C4:C13, right click the mouse, and click on “Refresh Data.” The computation of modeled and observed VMT by area type will be updated. Look at the “% diff” column. How did the comparison between modeled and observed VMT change? (Note that the original values for the percentage difference between modeled and observed VMT, with the full set of traffic counts, are saved in the column labeled “all counts.” This will enable you to compare the results from the two sets of count data.)

Answer: The modeled VMT is still a little low, but is closer to the observed. It is still lower in suburban areas than in other area types, but the modeled VMT for the rural area type is now significantly higher than the observed.

5. Go back to the tab “VMT-FT.” Place the cursor in one of the cells C4:C13, right click the mouse, and click on “Refresh Data.” The computation of modeled and observed VMT by facility type will be updated. Look at the “% diff” column. How did the comparison between modeled and observed VMT change?

Answer: The low VMT is still concentrated on freeways, but the percentage difference between modeled and observed VMT no longer exceeds the FHWA standard of 7 percent.

6. How do you explain the differences in validation results between the original case and the case where there are half as many available traffic counts? What does this tell you about traffic count data and how it is used in model validation?

Answer: Generally, the results are better with the smaller set of links with traffic counts. This may be simply because the model does better in the locations in the smaller set of count data. On the other hand, perhaps with a larger number of counts, the probability of inconsistency among the count data makes it harder for the model to match the counts. This is a particular possibility with this data set since the highest error rate is on freeways, which have relatively few links (because of their limited access), increasing the possibility that counts in locations near one another are inconsistent. It would be worth examining the traffic count data to determine if there are inconsistencies in the count data that can be corrected.